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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/721,247

11/26/2003

Yong Jae Lee

K-0572

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EXAMINER

HECKERT, JASON MARK

ART UNIT

PAPER NUMBER

1746

MAIL DATE

DELIVERY MODE

05/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/721,247

Applicant(s)

LEE, YONG JAE

Examiner

Jason Heckert

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 9 -11, filed 3/1/07, with respect to the rejection(s) of claim(s) 22 under 35 U.S.C. §112 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly discovered prior art.
2. Applicant's arguments, see pages 9 -11, filed 3/1/07, with respect to the rejection(s) of claim(s) 12-22 under 35 U.S.C. §102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly discovered prior art.
3. Applicant's arguments, see pages 9 -11, filed 3/1/07, with respect to the rejection(s) of claim(s) 1-11 under 35 U.S.C. §103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly discovered prior art.
4. Specifically the applicant has amended claim one to include the limitation of "sensing a concentration of the salt water based on a distance of the float *from the sensor*" and the examiner agrees that Rak does not distinctly disclose this feature. However, Rak does disclose that the detecting means can be a Hall effect switch, which

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are common in the art. Golladay et al. disclose a Hall effect liquid level sensing apparatus that works as claimed.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kendt in view of Rak in view of Golladay et al. Kendt discloses a dishwasher comprising a housing 11, a tub 12, a spray arm 24, and a water softener 30. The water softener utilizes ion exchange resins, however it does not include a float and sensor for sensing the concentration of salt water. Rak discloses a water softener with such features. This water softener has at least one container 26a for holding an ion-exchange resin, one tank 10 for holding salt and saltwater, a float 48, and a liquid sensing apparatus (col. 4 line 35-36) that determines if the saltwater concentration is sufficient. The liquid sensing apparatus detects the brine concentration by determining if the float has risen to a certain height (col. 3 lines 18-32). The float 48 is mounted on shaft 52 to guide the movement of the float. Rak discloses that the preferable means for detection of the location of the float is a magnet mounted axially within the float and a magnetic proximity reed switch or a Hall-effect switch within the shaft on which the float is mounted. Depending on the embodiment, the switches are attached to the

control apparatus 20 by wires (56, 82a, 82b). These wires are capable of transmitting a current.

3. The sensor detects whether the liquid level is sufficient, and thereby the concentration of the brine, based on the distance between the detector and the float. If the liquid level is not high enough, and therefore the concentration is not sufficient, an indication, in the form of an alarm, is given (col. 3 line 61-62). This satisfies the limitation of an information device. Furthermore, this indication is based on a determination of whether the quantities of solid salt and water are sufficient to indicate that an adequate salt supply is present (col. 3 line 68-69), which meets the limitation of informing on the basis of a salt shortage.

4. Neither Kendt nor Rak disclose a sensor that detects a distance from the float to the sensor. However, as stated previously, Rak discloses that the preferable means for detection of the location of the float is a magnet mounted axially within the float and a magnetic proximity reed switch or a Hall-effect switch within the shaft on which the float is mounted. Many types of Hall-effect sensors are known in the art. Golladay et al. discloses a Hall-effect liquid level sensing apparatus that comprises a float carrying a magnet and a Hall-effect sensor that detects the location of the float. The device further includes a control device that enables the device to sense the depth of the float (see abstract).

5. As stated previously, Kendt discloses a water softener in a dishwasher, but does not disclose many features of the softener. It would have been obvious at the time of the invention, to modify the dishwasher disclosed by Kendt, to include any water

softener that was conventionally used, such as that taught by Rak with a float type salt sensor, in order to detect and alarm the user of insufficient brine concentrations.

Furthermore, it would have been obvious to modify Kendt and Rak and include a Hall-effect apparatus, as disclosed by Rak, such as one that measures a location, depth, or distance, as taught by Golladay et al. as it is a known type of Hall-effect apparatus.

6. Claims 12-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rak in view of Golladay et al. Rak discloses a water softener that has at least one container 26a for holding an ion-exchange resin, one tank 10 for holding salt and saltwater, a float 48, and a liquid sensing apparatus (col. 4 line 35-36) that determines if the saltwater concentration is sufficient. The liquid sensing apparatus detects the brine concentration by determining if the float has risen to a certain height (col. 3 lines 18-32). The float 48 is mounted on shaft 52 to guide the movement of the float. Rak discloses that the preferable means for detection of the location of the float is a magnet mounted axially within the float and a magnetic proximity reed switch or a Hall effect switch within the shaft on which the float is mounted. Depending on the embodiment, the switches are attached to the control apparatus 20 by wires (56, 82a, 82b). These wires are capable of transmitting a current.

7. The sensor detects whether the liquid level is sufficient, and thereby the concentration of the brine, based on the distance between the detector and the float. If the liquid level is not high enough, and therefore the concentration is not sufficient, an indication, in the form of an alarm, is given (col. 3 line 61-62). This satisfies the limitation of an information device. Furthermore, this indication is based on a

determination of whether the quantities of solid salt and water are sufficient to indicate that an adequate salt supply is present (col. 3 line 68-69), which meets the limitation of informing on the basis of a salt shortage.

8. Rak does not disclose a sensor that detects a distance from the float to the sensor. However, as stated previously, Rak discloses that the preferable means for detection of the location of the float is a magnet mounted axially within the float and a magnetic proximity reed switch or a Hall-effect switch within the shaft on which the float is mounted. Many types of Hall-effect sensors are known in the art. Golladay et al. discloses a Hall-effect liquid level sensing apparatus that comprises a float carrying a magnet and a Hall-effect sensor that detects the location of the float. The device further includes a control device that enables the device to sense the depth of the float (see abstract). It would have been obvious at the time of the invention, to modify the water softener of Rak and include a Hall-effect apparatus, as disclosed by Rak, such as one that measures a location, depth, or distance, as taught by Golladay et al. as it is a known type of Hall-effect apparatus.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

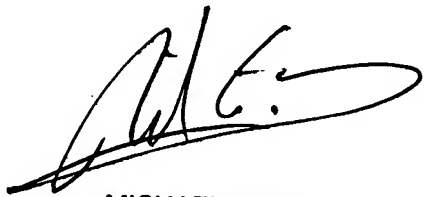
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Heckert whose telephone number is (571) 272-2702. The examiner can normally be reached on Mon. to Friday, 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571)272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMH



MICHAEL BARR
SUPERVISORY PATENT EXAMINER